Medical Physics PhD position

Title: "Implementation and validation of 4D motion mitigation techniques and dose calculation methods for protons and carbon ions"

@ MedAustron Centre for Ion Therapy Treatment and Research in Wiener Neustadt
Medical University of Vienna / AKH Wien

Together with the Medical University of Vienna, the Med Austron Centre for Ion Therapy Treatment and Research in Wiener Neustadt offers a 30h PhD position with an enrolment in the PhD programme "Medical Physics" at the Medical University of Vienna starting from autumn 2019.

Job description:

The research project will focus on 4D dosimetry and dose calculation in the context of clinical motion mitigation techniques when treating moving targets with scanned particle beams. Interplay dose calculation and its experimental validation with the in-house built anthropomorphic moving phantom ARDOS[1] will be an essential part of the project. For defining optimal motion mitigation technique for selected tumour indications spot and beam delivery parameter need to be identified in close collaboration with the team of the accelerator physicists. The PhD student will also participate in the carbon commissioning phase of the non-clinical research infrastructure at the MedAustron facility and works in close cooperation with other projects focusing on online-tumour tracking and the respective implementation for moving targets.

Qualifications:

- Master degree in Physics, biomedical engineering or related studies
- Research interest and ambitions for excellence in medical physics
- Fluent in English (oral and written)
- Analytical skills and ability to work independently on a project basis
- Experience with treatment planning and dosimetry in radiotherapy, ideally particle therapy
- Basic knowledge in Python and MatLab programming
- Good communication skills relevant for working in an international research and study group

Research team and infrastructure

The close cooperation between the MedAustron Centre for Ion Therapy and Research in Wiener Neustadt and the Medical University of Vienna offers the opportunity to work in the field of ion beam therapy on a high level research basis. Beam time, equipment and infrastructure are available for the researchers of the Medical University of Vienna. Especially for the announced PhD project a variety of state-of the art detectors, e.g ionisation chambers, thermoluminescence dosimeter, films as well as detector arrays are available. Performing measurements in a proton and carbon ion beam using the modern detector equipment in combination with the anthropomorphic ARDOS phantom facilitates to work in the cutting edge field of cancer research.

The Department of Radiation Oncology is a high-end equipped photon and brachytherapy department with 5 linear accelerators, CT, an open MR and access to PET/CT and MR/PET

imaging devices in the general hospital of Vienna. More than 5 PhD students and 7 post-docs are performing research in the context of precision radiotherapy with protons or ions in the medical radiation physics group of Univ.-Prof. Dr. Dietmar Georg.

Conditions:

- 30 hours/week (payment according to salary scheme of the Austrian science fund FWF; brutto/month: 2162.40€ plus 13th and 14th salary)
- Employer: MedAustron Centre for Ion Therapy and Research, Wiener Neustadt
- Place of work: The working place will be at the MedAustron Centre for Ion Therapy and Research, which is well connected with public transportation to the city of Vienna and Wiener Neustadt.

Closing date for application: September 30, 2019

Envisaged starting date: November 1, 2019

Please submit application and CV by email to Prof. Dr. Dietmar Georg (dietmar.georg@meduniwien.ac.at)

The employer does not discriminate on the grounds of race, colour, religion, sex, sexual orientation, including transgender status and gender expression, national origin, citizenship status, age or disability.

Disabled candidates are preferentially considered in case of equal qualification. Applications from women are encouraged.

[1] Kostiukhina et al (2017). Advanced Radiation DOSimetry phantom (ARDOS) - A versatile breathing phantom for 4D radiation therapy and medical imaging. *Physics in Medicine and Biology 62: 8136–8153.*